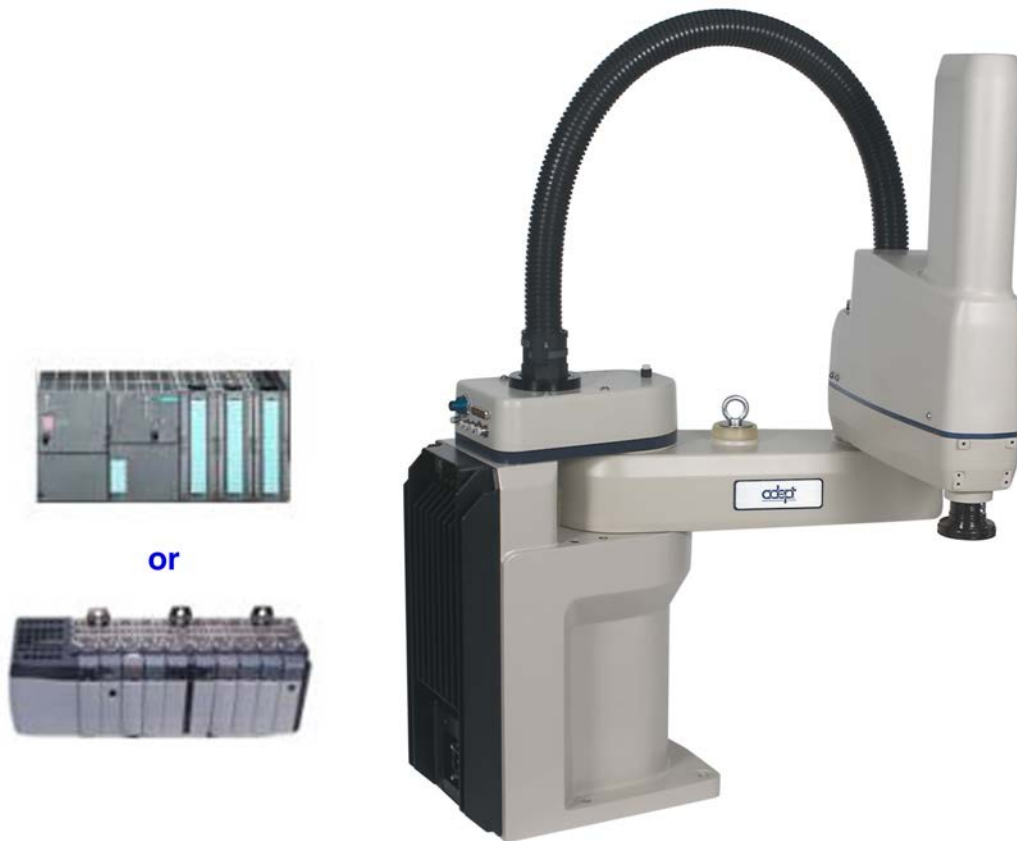


Adept Cobra ePLC Robot

Quick Setup Guide

for ePLC600, 800, and
800 Inverted Robots



P/N: 13320-000, Rev C

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Chapter 1: Cobra ePLC Robot Quick Setup

1.1 Introduction

Process Overview

This Quick Setup Guide steps you through the installation and start-up of your Adept Cobra ePLC robot. The major steps are:

- **Preparation**, including workcell layout and safety
- **Hardware Installation**, including mounting the robot and system cable connections
- **System Start-Up**, including system configuration and turning on the robot

NOTE: This guide does not apply to Adept robot systems that include an Adept SmartController motion controller. Refer to the appropriate Adept Cobra robot user's guide for those systems.

During the installation and start-up process, refer also to your PLC user's guide and the appropriate Adept Cobra user's guide, available on either the Adept support disk or the Adept Document Library for more information.

Resources on the Adept Support Disk

- This guide (along with three other ePLC robot quick setup guides)
- The Adept Cobra s600/800 User's Guide and Adept Cobra s800 Inverted User's Guide
- The Adept ePLC Connect 3 Software User's Guide
- The Siemens Function Block pdf
- The Siemens Robot Communication pdf
- Allen-Bradley PLC code examples
- Siemens PLC code examples

1.2 Safety



WARNING: Adept Technology strictly prohibits installation or operation of an Adept robot without adequate safeguards according to applicable local and national standards. See "Typical Workcell Layout" for a simple workcell layout.

You must read the Robot Installation and Operation chapters in the robot user's guide for information on safe operation of your robot system, and the Adept Robot Safety Guide.

Refer to Installing User-Supplied Safety Equipment in the System Installation chapter of the Adept robot user's guide, which provides details on connecting a user-designed E-Stop system to the XUSR connector on the robot.

1.3 Workcell Layout

The following figure shows a simple workcell layout with a user-supplied safety barrier and E-Stops provided by the Front Panel and optional T20 pendant.

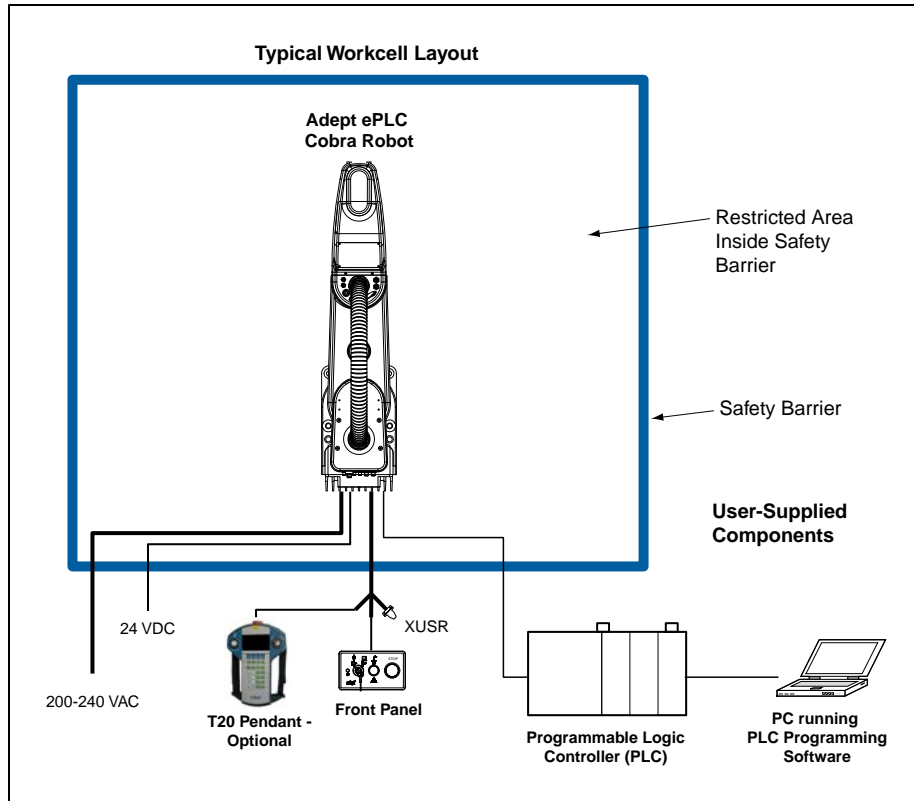


Figure 1-1. Typical Workcell Layout

1.4 Installing the Robot

NOTE: Do not move the robot's outer arm from the shipping position, as shown.

Support the robot by the eyebolt on the top of the inner link before removing the shipping bolts from the pallet. This will prevent the robot from tipping over. See the following figure.

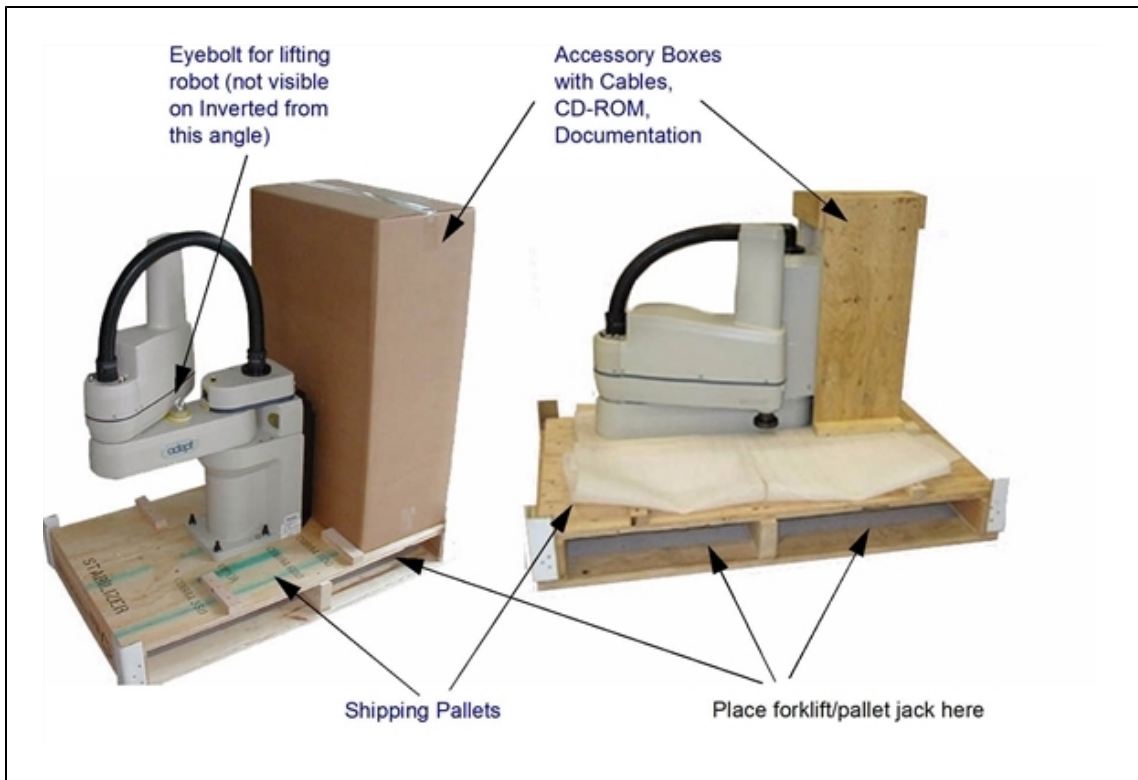


Figure 1-2. Cobra ePLC600, ePLC800 Inverted Robots on Pallets

Mounting the Robot

Mount the robot to a rigid surface that will prevent vibration and flexing during operation. Adept recommends a 25 mm (1 in.) thick steel plate, mounted to a rigid steel tube frame. See the following figures for the mounting hole dimensions.

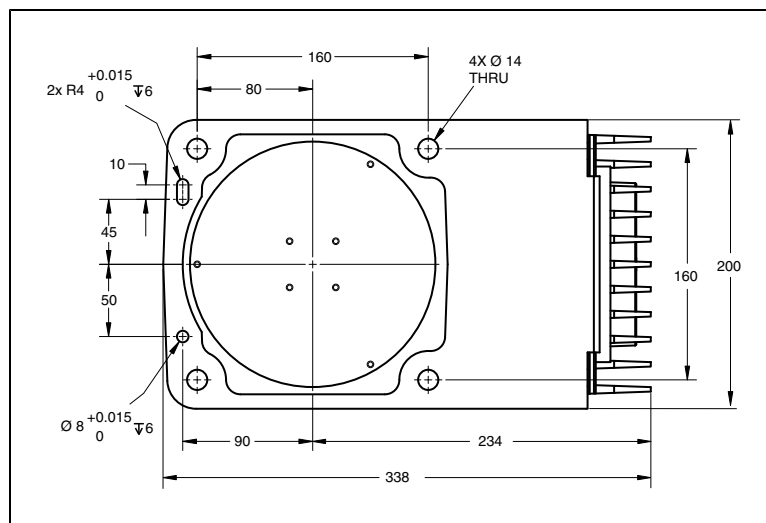


Figure 1-3. Mounting Hole Dimensions, Upright Robots

1.4 Installing the Robot

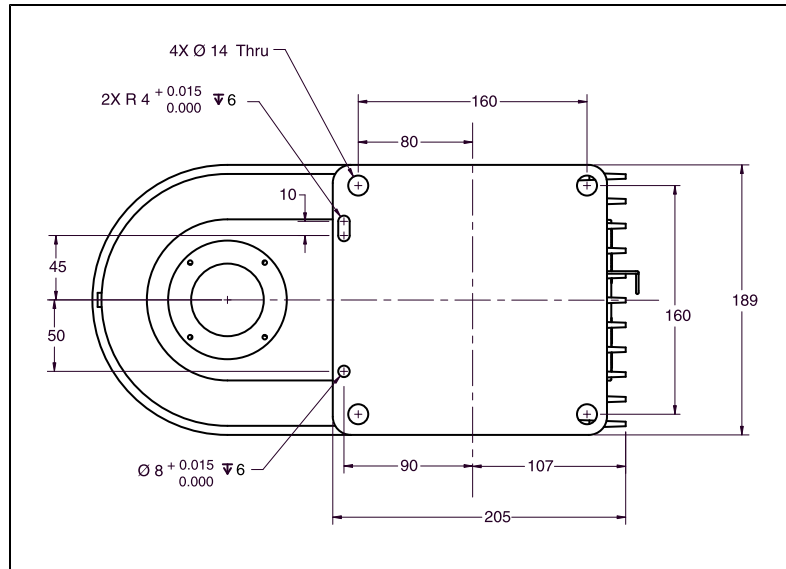


Figure 1-4. Mounting Hole Dimensions, Inverted Robot

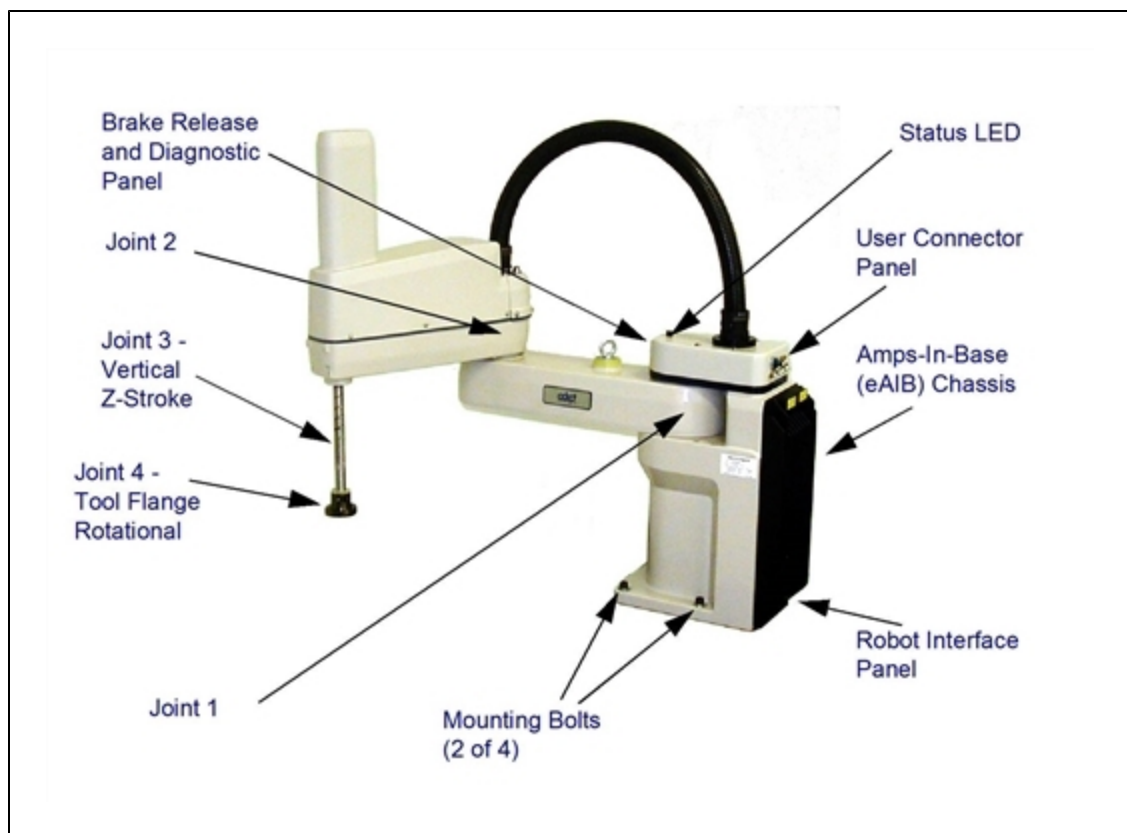


Figure 1-5. Cobra ePLC Components, ePLC800 Robot Shown

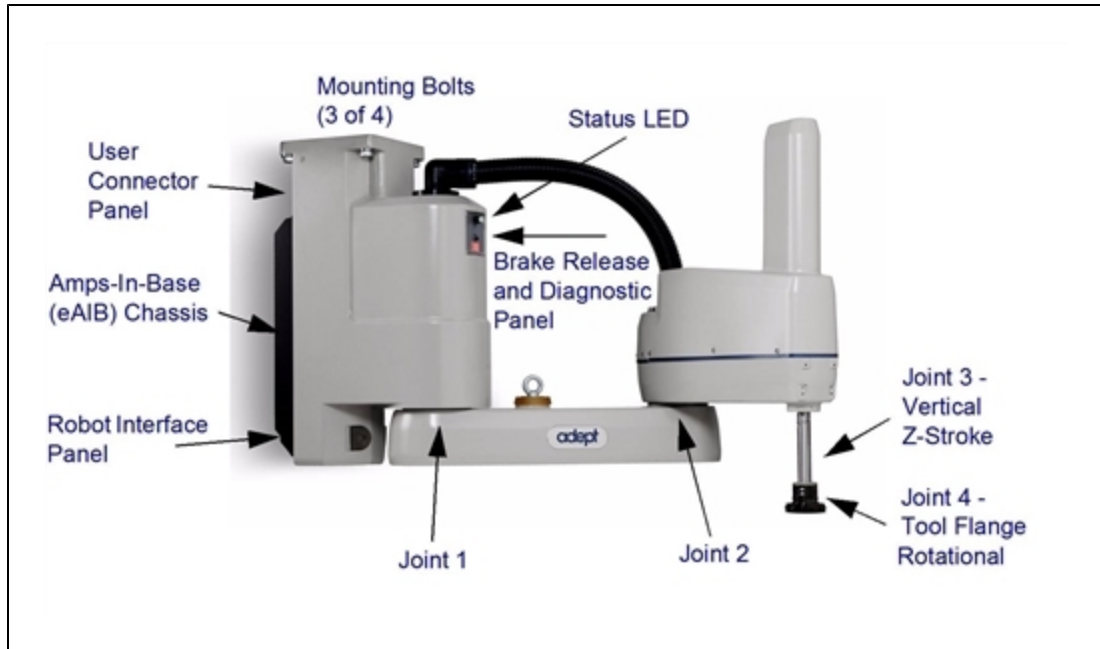


Figure 1-6. Cobra ePLC Components, ePLC800 Inverted Robot

1.5 System Cable Connections

Open the Accessory box and locate the eAIB XSYSTEM cable. Connect the cables and peripherals as shown in the following figure. Parts and steps are covered in the following two tables. Refer to the System Installation chapter in your Adept Cobra user's guide for AC specifications and wiring instructions.

Part	Cable and Parts List	Part #	Part of:	Notes
A	eAIB XSYSTEM Cable Assembly	13323-000		standard, eAIB
B	User E-Stop, Safety Gate	n/a	n/a	user-supplied
C	XUSR Jumper Plug	04736-000	13323-000	standard, eAIB
D	Front Panel	90356-10358		standard
E	Front Panel Cable	10356-10500	90356-10358	standard
F	Front Panel Jumper Plug	10053-000	13323-000	standard, eAIB
G	XMCP Jumper Plug	04737-000	13323-000	standard, eAIB
H	T20 Bypass Plug	10048-000	10055-000	standard, T20
J	T20 Adapter Cable	10051-003	10055-000	standard, T20
K	T20 Pendant (option)	10055-000		option
L	AC Power Cable (option)	04118-000	90565-010	user-supplied
M	24 VDC Power Cable (option)	04120-000	90565-010	user-supplied

Part	Cable and Parts List	Part #	Part of:	Notes
N	24 VDC, 6 A Power Supply (option)	04536-000	90565-010	user-supplied
P	Ethernet Cable - PC -> PLC (Only while programming PLC)	n/a	n/a	user-supplied
Q	Ethernet Cable - PLC -> switch	n/a	n/a	user-supplied
R	Ethernet Cable - switch -> SmartVision EX	n/a	n/a	user-supplied
S	Ethernet switch, cable	n/a	n/a	user-supplied
T	Camera and cable	n/a	n/a	option

Power Requirements

The power requirements for the SmartVision EX and the Cobra robot are covered in their respective user guides. For 24 VDC, both can be powered by the same power supply.

Step	Connection	Part
1	Connect eAIB XSYSTEM cable to XSYSTEM on eAIB	A
2	Connect a user E-Stop or Muted Safety Gate to the eAIB XSYSTEM cable XUSR connector or	B
2a	verify XUSR jumper plug is installed in eAIB XSYSTEM cable XUSR connector.	C
3	Connect Front Panel cable to Front Panel and eAIB XSYSTEM cable XFP connector or	D, E
3a	if no Front Panel, install FP jumper on eAIB XSYSTEM cable XFP connector. See NOTE after table.	F
4	Connect T20 adapter cable to eAIB XSYSTEM cable XMCP connector or	J, K
4a	if no T20, install XMCP jumper or T20 Adapter Cable with T20 bypass plug.	G or H
5	Connect user-supplied ground to robot. See robot user's guide for location.	n/a
5a	Connect user-supplied ground to SmartVision EX, if used. See SmartVision EX user's guide for location.	n/a
6	Connect 200-240 VAC to AC Input on eAIB Interface Panel; secure with clamp.	L
7	Connect 24 VDC to DC Input on Interface Panel.	N, M
7a	Connect 24 VDC to SmartVision EX, if used.	N, M
8	Connect Ethernet cable from PC to PLC.	P

Step	Connection	Part
9	Connect Ethernet cable from PLC to switch.	S
9a	Connect Ethernet cable from switch to eAIB.	Q S
9b	Connect Ethernet cable from SmartVision EX, if used, to switch.	R, S
10	Connect optional camera and cable to SmartVision EX, if used.	T

NOTE: A front panel ships with each Cobra ePLC system, but you can choose not to use it if you replace its functionality with equivalent circuits. That is beyond the scope of this guide.

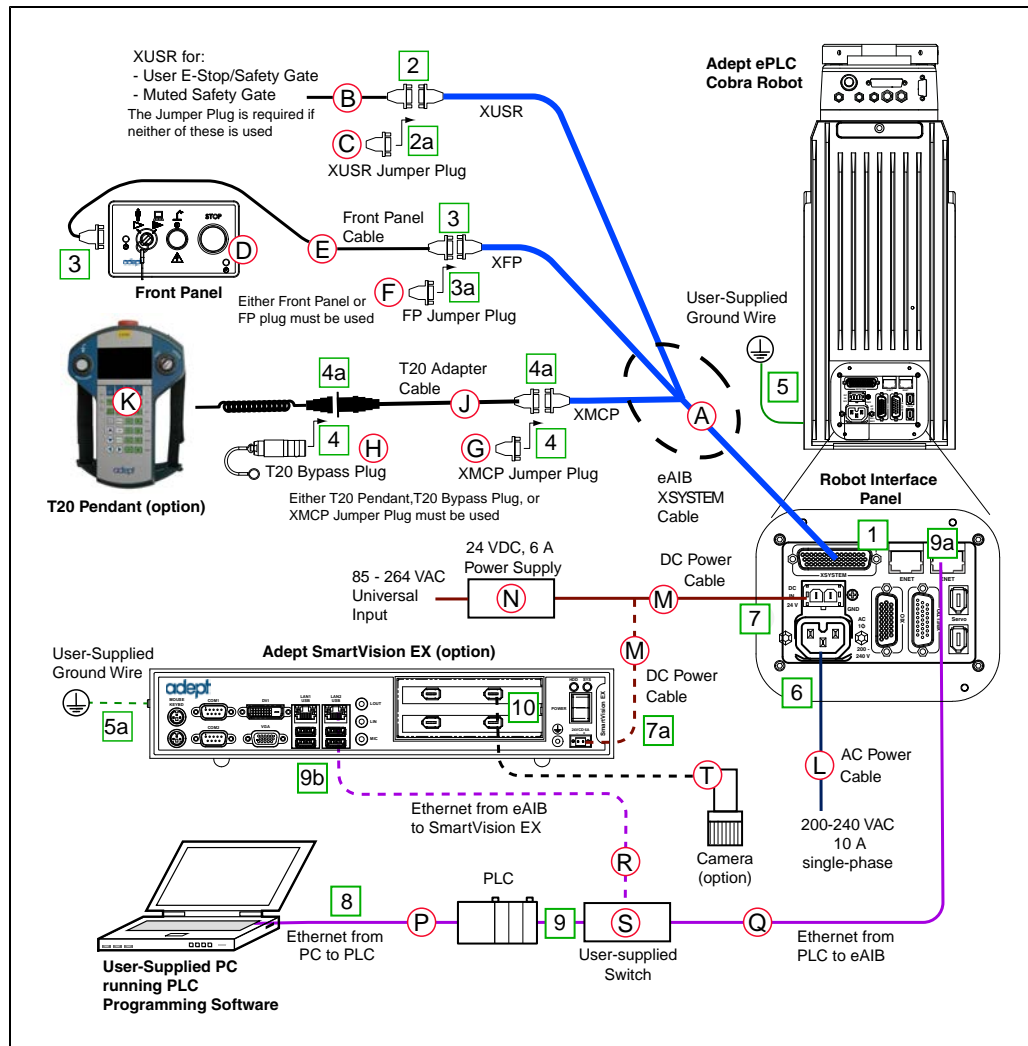


Figure 1-7. Configuration with Vision

1.6 Configuration

The user-supplied PLC and Cobra robot are connected either through a shared network or via a user-supplied Ethernet cable.

When the Cobra ePLC robot is powered on and waiting for a PLC connection, the robot status panel will display its IP address, two digits at a time.

The format will be:

IP xxx-xxx-xxx-xxx OK

NOTE: If you can use the robot's default IP address, then you can skip the Adept ACE software installation completely.

Installing Adept ACE Software

Adept ACE is used to change the IP address of the robot and for troubleshooting. You install the Adept ACE software onto your PC from the Adept web site download center.

NOTE: You will have to restart the PC after installing Adept ACE software.

Setting the Robot IP Address

Configure the IP address of the Adept Cobra ePLC robot using Adept ACE software.

1. Connect the PC and the robot, either through a shared network or with an Ethernet cable between them.
2. Start the Adept ACE software.
3. Click the Detect and Configure button, circled in the following figure.

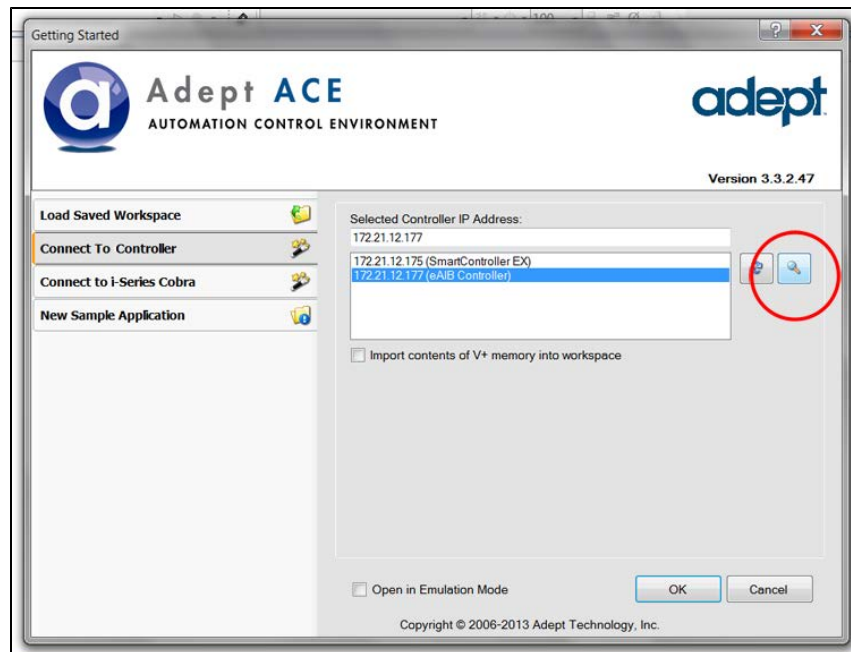


Figure 1-8. Detect and Configure Button

The IP address detection and configuration window will open. The ACE software will show the IP address of any controllers it detects. See the following figure.

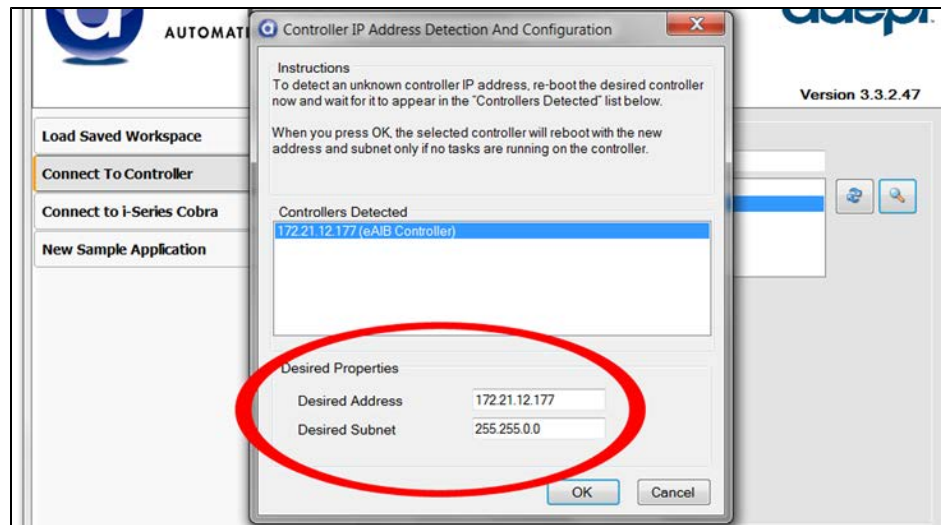


Figure 1-9. IP Addresses Detected

4. You can change the IP address and subnet mask in the Desired Address and Desired Subnet fields, if needed.
5. Click OK. The ACE software will ask you to wait for the controller to reboot.

Setting the Robot IP Address on the PLC

Allen-Bradley Systems

Using your PLC software, set the IP address for the PLC to connect to on the robot.

The following figure is an example of an Allen Bradley PLC, with RS Logix software.

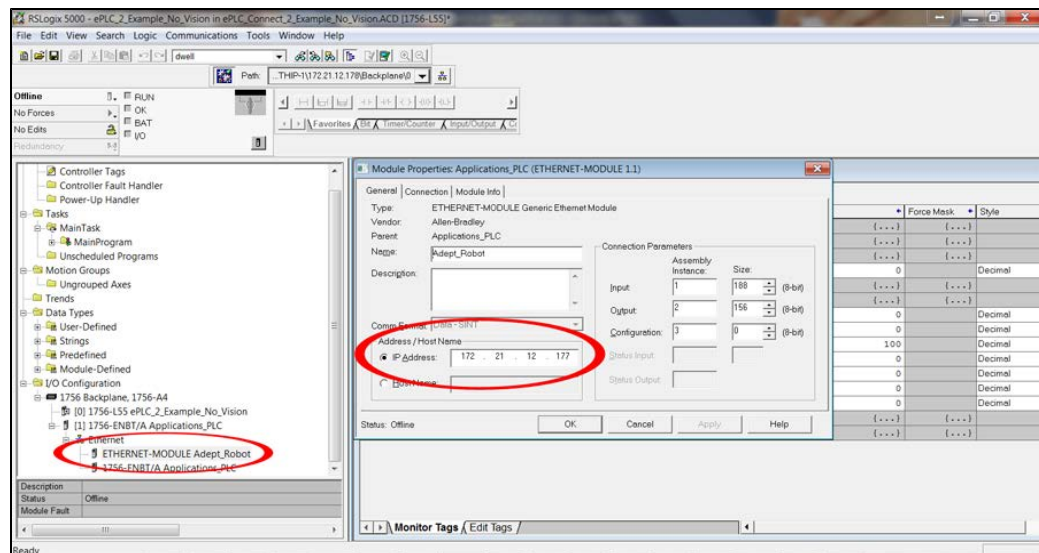


Figure 1-10. Example: Setting an IP Address with RS Logix

The PLC should now be able to communicate with the robot.

Siemens Systems

The Siemens documentation is included on the support disk that came with your system. The communication document will include the words "Siemens_RobotComm".

You can also refer to <http://support.automation.siemens.com/WW/view/en/79100154>, which links to the Siemens manuals on Adept robots. Download FB610 "ADEPT_RobotComm".

Scroll down to display the two files to download.

When accessing this link with Internet Explorer, right-click on the pdf that you want, and select Open link.

1.7 Start-up Procedure

Once the system has been installed and checked, you are ready to start up the system.

Switch on the robot and the PLC.

- The Robot Status LED is off.
- The code on the Diagnostic Panel displays OK.

Siemens Systems

The Siemens documentation is included on the support disk that came with your system. The control document will include the words "Siemens_Function_Block".

You can also refer to <http://support.automation.siemens.com/WW/view/en/79100154>, which links to the Siemens manuals on Adept robots. Download FB600 "ADEPT_RobotControl".

- Scroll down to display the two files to download.
- When accessing this link with Internet Explorer, right-click on the pdf that you want, and select Open link.

Allen-Bradley Systems

The Adept support disk and Adept web site have some examples for the Allen Bradley PLC using RS Logix. On the web site, go to adept.com, and then:

Support > User Forums > Controls > ePLC Connect Robot Control

This gives some examples to start with.

Using the PLC to Enable High Power

The details of enabling high power to the robot will vary, depending on the software running on your PLC.

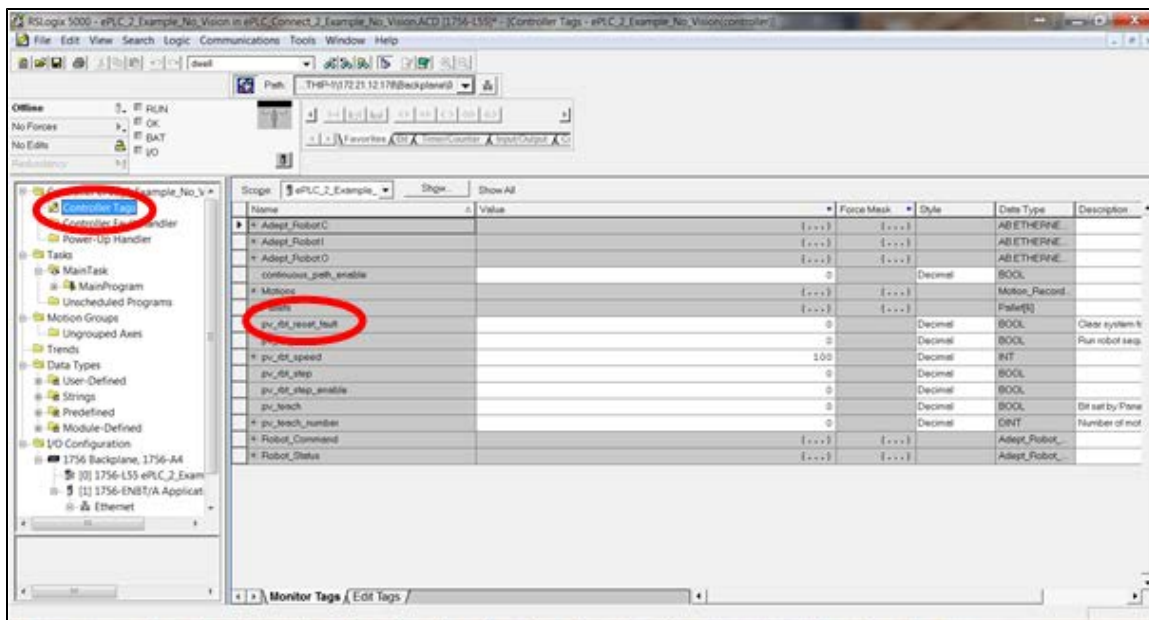


Figure 1-11. Example: Enabling High Power with RS Logix

In the RS Logix example, double-clicking Controller Tags, and then setting the value of pv_rbt_reset_fault to 1 will enable high power on the robot.

NOTE: pv_rbt_reset_fault is the name for a register which is fixed when downloading the PLC code example from the support disk or Adept Web site.

For Both PLC Types

Once high power is enabled, the Robot Status Panel displays ON, and the amber Robot Status LED is on.

1.8 Finding Additional Information

Installing Optional Equipment

For details on installing optional equipment, see the following topics in the Optional Equipment Installation chapter of the appropriate Adept Cobra user's guide:

- Installing end-effectors
- Connecting user air and electrical lines to user connection panel
- Mounting external equipment on the robot
- Mounting the robot solenoid option kit

NOTE: For dimensions and specifications, see Technical Specifications in the appropriate Adept Cobra user's guide.

System Operation

For details on system operation, see the following topics in the System Operation chapter of the appropriate Adept Cobra user's guide:

- Robot Status LED Indicator
- Status panel fault codes
- Brake Release button (located above or in diagnostic panel). To move Joint 3 manually, press the Brake Release button.
- Connecting digital I/O on the XIO connector at the robot interface panel
- Connecting a user-designed E-Stop System

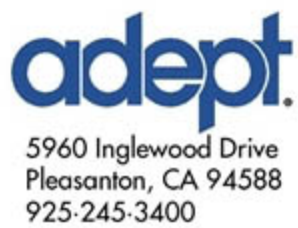
For information on the Adept ePLC Connect software interface, refer to the Adept ePLC Connect 3 Software User's Guide.

How Can I Get Help?

Refer to the *How to Get Help Resource Guide* (Adept P/N 00961-00700) for details on getting assistance with your Adept software and hardware. Additionally, you can access information sources on Adept's corporate web site:

<http://www.adept.com>

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